#include <iostream>

#include <fstream>

#define INFINIT 1000000000

using namespace std;

ifstream fin("dijkstra.in");

ofstream fout("dijkstra.out");

int n , a[105][105], v[105], d[105], t[105];

int main()

{

int i , j , c , p;

fin >> n >> p;

for(i =1 ; i <= n ; ++i)

for(j = 1 ; j <= n ; ++j)

a[i][j] = INFINIT;

while( fin >> i >> j >> c )

a[i][j] = c;

for(i =1 ; i <= n ; i ++ )

{

v[i] = 0;

d[i] = a[p][i];

t[i] = p;

}

v[p] = 1, t[p] = 0, d[p] = 0;

d[0] = INFINIT;

for(int k = 1 ; k < n ; ++k)

{

int pmax = 0;

for(i = 1 ; i <= n ; ++i)

if(v[i] == 0 && d[i] < d[pmax])

pmax = i;

if(pmax > -1)

{

v[pmax] = 1;

for(i = 1; i <= n ; ++i)

if(v[i] == 0 && d[i] > d[pmax] + a[pmax][i])

d[i] = d[pmax] + a[pmax][i], t[i] = pmax;

}

}

for(i = 1 ;i <= n ; ++i)

fout << (d[i] != INFINIT ? d[i] : -1) << " ";

return 0;

}